

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ASSADOLLAH AWARZAMANI,
THOMAS WILFERT
and
JOERG HEYSE

Appeal No. 1997-4053
Application 08/548,714¹

HEARD: September 14, 1999

Before PATE, STAAB and CRAWFORD, **Administrative Patent Judges**.

¹ Application for patent filed October 26, 1995.

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PATE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's refusal to allow claims 1 through 3, 5, 6, 8 and 10 as amended after final rejection. The other remaining claims in the application, claims 4, 7, 9 and 11, are directed to allowable subject matter and stand objected to.

The claimed subject matter is directed to fuel injection for internal combustion engines. The fuel spray from the fuel injector is directed to an electric heating element in the cylinder head or intake pipe. The electric heating element is in the form of a Peltier element which is connected directly to the inner wall of the cylinder head or intake pipe. A further understanding of the claimed subject can be had by reference to the appealed claims appended to appellants' brief.

The references of record relied upon by the examiner as evidence of obviousness are:

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Uddin	5,038,742	Aug. 13, 1991
Barret ² (European patent)	456,533	Nov. 13, 1991

THE REJECTION

Claims 1 through 3, 5, 6, 8 and 10 stand rejected under 35 U.S.C. § 103 as unpatentable over Barret in view of Uddin. According to the examiner, Barret discloses an internal combustion engine having a fuel injector 4 which directs fuel to a heating element 5. The heating element 5 is embedded in an inner wall of the intake port of the cylinder head. However, the heating element of Barret is a resistance heating element and does not rely on the Peltier effect. Uddin teaches an internal combustion engine wherein a Peltier heating element is used to heat fuel/air mixture being supplied to the engine. Therefore, the examiner concludes that it would have been obvious to one of ordinary skill to have substituted for Barret's heating element a Peltier

² Our understanding of the European patent to Barret is via an English language translation, a copy of which is appended to our decision.

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element as taught by Uddin. The examiner states that such a substitution would allow more rapid heating due to the Peltier effect. The examiner additionally states that to mount the heating element in the intake pipe rather than the cylinder head intake port is an obvious matter of design choice.

OPINION

We have carefully reviewed the rejection on appeal in light of the arguments of the appellants and the examiner. As a

result of this review, we have determined that the applied prior art establishes a ***prima facie*** case of obviousness with respect to the subject matter on appeal. Appellants have not rebutted the ***prima facie*** case of obviousness with additional evidence. Therefore, we will sustain the rejection of claims 1 and 8, and the dependent rejected claims that depend therefrom.

We are in agreement with the examiner's findings of fact with respect to the Barret and Uddin references. We are

further in agreement with the examiner's conclusion that it would have been obvious to use a thermoelectric Peltier heater in the fuel injection system of Barret for the advantages that Uddin discloses such heaters to have. Uddin discloses that Peltier heaters are capable of extremely accurate temperature control, typically to within plus or minus 0.1EC (Uddin, column 2, at lines 20 through 23). Uddin further discloses that the response time of these thermoelectric heaters are extremely quick. See column 3, at lines 6 and 7. Therefore, we are in agreement with the examiner's conclusion that it would have been obvious to utilize a Peltier type heater in the device of Barret for the advantage of accurate temperature control and extremely quick operation.

We acknowledge that appellants argue that the device of Barret includes an insulator for thermally insulating the electric heater from the engine cylinder head. However, the Peltier device functions by "pumping" heat conducted to it from the surrounding material to the fuel contacting surface.

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Therefore, one of ordinary skill intending to utilize a Peltier device in an internal combustion fuel system would clearly dispense with the insulation disclosed by Barret to allow the Peltier device to pump heat from the cylinder head to the fuel contacting surface. To argue otherwise, as appellants do, is to presume stupidity for a worker in the art rather than ordinary skill. ***See In re Sovish***, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

Appellants further argue that Barret directs all of the fuel from the fuel injection valve onto the heating element. However, appellants' independent claims call for injecting the fuel at least in part at the heating element. A stream of fuel directed wholly on a heating element is directed at least in part on that element.

Appellants also argue that Barret does not disclose a Peltier heating element. The examiner is in agreement with this and has not made a rejection under § 102. Appellants argue that the Peltier element in Uddin is preferably a

cylindrical element. Therefore, Uddin "would teach Barret to form a cylindrical Peltier element which would heat air as it flows through the air admission tube" (corrected brief, page 6, last line, page 7, line 2). However, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. **See *In re Keller***, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

Appellants further argue that the combination of references is based on impermissible hindsight. We disagree. As noted above, the examiner has ample motivation in the express disclosure of Uddin for the precise controllability and fast action of a Peltier heater in an internal combustion fuel system. Accordingly, it would have been obvious to use a Peltier heater in the system of Barret for these advantages. Finally, we are in agreement with the examiner that placement of the heater in either the intake pipe or the wall of the cylinder head is an obvious choice in design, a conclusion that appellants have not argued.

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With respect to claims 8 and 10, appellants premise the patentability of these claims on the arguments tendered with respect to claim 1. Here again, we reiterate our opinion that

the subject matter of these claims is *prima facie* obvious in a similar manner as to claim 1.

The rejection of claims 1 through 3, 5, 6, 8 and 10 has been affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

WILLIAM F. PATE, III)	
Administrative Patent Judge)	
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)	BOARD OF
PATENT		

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	LAWRENCE J. STAAB)	APPEALS AND
	Administrative Patent Judge)	
INTERFERENCES)	
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	MURRIEL E. CRAWFORD)	
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WFP:psb

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